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longer requiring the shelter of the vines. The barking of the cork may be effected when the plant has acquired sufficient strength to resist the operation, and the time chosen for this operation is in the summer. The cork of the first barking is called *corcho bornio*, *bornizo*, or virgin, and is not fit for making corks. The cork taken after the first barking is called *pelas*, or secondary cork. The method employed in Spain for this operation consists in the total barking of the trunk, and not partial barking, or barking one part of the year, and the remainder three, four, or five years later.

In proportion as the cork is taken from the tree, it is removed, and piled up in heaps. Sometimes the cork is cooked in the woods, but at other times this operation is effected in the caldrons that exist in the cork-factory. The slabs remain in boiling water during the space of one hour, this operation causing an increase of thickness (generally of one-fourth to one fifth), elasticity of the cork, and dissolution of tannin and other substances. The caldrons in which the cork is boiled are of copper, and are either cylindrical or rectangular. The boiling of the cork can also be effected by steam, for which purpose it is introduced into a wooden box lined on the inside with copper or zinc, which is filled with water and steam injected therein. The steaming of cork sometimes hardens it and makes it brittle. The loss of weight produced by boiling the cork varies between twelve and forty per cent.

In making corks it is necessary to take away the hard crust, or *raspa*, for which purpose a tool is used with a short handle and curved blade, called *doladera*, *raspador*, or *raspeta*. A workman can scrape from two to three square metres of cork daily, and the loss in weight of the cork by scraping is from twenty to thirty per cent. Scraping-machines are also used, two systems being employed, — the Besson and Tousseau. The former, propelled by steam, consists principally of horizontal spindles supplied with comb-like teeth, and turning with great velocity, at the rate of nine hundred revolutions a minute. The Tousseau scraper attacks the cork by means of a vertical iron shaft carrying several knives, whose edges are also vertical, and by the rotary movement of the shaft, giving fourteen hundred turns a minute, work like a brush. This machine is simpler than the Besson, and the slabs suffer less damage when worked by inexperienced workmen. Before cutting the slabs into strips, they are cooked for about half an hour, so as to facilitate the cutting, and piled up soon after in a damp place, so as to preserve the softness until ready to operate upon. The slabs are divided into three strips (*rebanadas*), the width of which is equal to the length of the corks, and in such a way, that, if the cork be placed in the position occupied by the slab on the tree, they would have their fibres running alike. The workmen obtain or cut the strips by means of a knife with flat surface and curved edge, called *cuchilla de rebanar*. The strips are then made into squares by means of the *cuchilla*. They then have the edges cut, and, thus prepared, they are ready to be made into corks. This and the preceding operation are the most difficult of the cork-industry, requiring great intelligence if the slabs and strips are to be cut to the best advantage.

In the manufacture of the corks, the squares made into octagons first pass into the hands of the workman, who is furnished with a knife composed of two pieces, — one of them similar to an ordinary knife, and the other a blade the edge of which fits into the first. Consul Schench says that only by seeing is it possible to form an idea of the rapidity with which these men take hold of a square, and from it make a cork. They hold the knife by a small iron catch to the table in front of them, and, giving to the square a circular movement, the result is that the cork is made in a few seconds. The squares are usually boiled for about a quarter of an hour. They are then deposited in a cool place, and four or five days after they are sorted, and kept damp until required. The amount which the workmen receive for cutting 1,000 corks varies from .75 to 4 *pesetas* according to the kind of workmen (the *peseta* is equivalent to about 9½ pence).

Machines are also employed to make corks; and all consist, at the base, of a knife, the blade of which is placed horizontally, joined generally to a piece of wood, and to which a backward

and forward movement is given similar to that of a carpenter's plane. In moving, the knife turns the square cork, which, being attacked by the knife, takes off a strip of cork more or less thick, according to the distance from the axle of the cork to the edge of the knife. If these are parallel, the result is that the cork is cylindrical; and if not, it becomes conical. The cork-maker or workman has a large basket, or several of them, in which he places the corks according to size or quality; but this first classification is not sufficient, and the corks are placed upon a table, the back part of which is furnished with boxes the front part of which are open to the operator. To classify the corks according to size, they also employ wooden boxes, the bottoms of which can be taken out or put in, having a kind of grating of wood somewhat resembling Venetian blinds. The boxes are suspended by ropes to the ceiling, and the workman gives it a swing backwards and forwards, by which the smaller corks drop out at the bottom. With this apparatus worked by one man, 100,000 corks are classified for their size in one day. The corks are washed in a solution of oxalic acid or bioxalate of potash. As soon as washed they are placed out to dry gradually in the shade, in order to enable them to retain the silky gloss which the cork has when it is damp. For packing, 30,000 corks constitute what is called a bale. For South America and Oceania, bales consisting of 5,000 to 10,000 corks are made, and for England the sacks or bales are made to contain 100 gross, or 14,400 corks for those of the larger size, and 150 gross for those of smaller dimensions. The greatest number of corks are manufactured in the province of Gerona; and the most important towns engaged in the industry are San Filieu de Guixols, Palafrugell, and Cassa de la Selva. The number of workmen engaged in the cork-industry in Spain is said to be not less than 12,000.

NOTES AND NEWS.

ACCORDING to M. Edouard Marbeau, in the *Revue Française de l'Etranger et des Colonies*, quoting from Professor Léon Le Fort, the following is the rate of increase of population in several European countries: for every 1,000 inhabitants there are born in Hungary 42 children; in Germany, 39; in England, 35; in France, 25. In 1778 the number in France was 38.4. At the present rate of increase, the population would be doubled in Saxony in 45 years; in England, in 52 years; in Prussia, in 54 years; in France, in 198 years.

— The Belgian consul-general at Singapore, in a report quoted in the *English Board of Trade Journal*, says that rubies and sapphires abound in the Siamese provinces of Chantaboun and Battambang. Several mines have been worked since a remote period by the natives, but for a long time they produced for the most part only stones of little value. It was in 1874 that the first mine of sapphires of good quality was discovered by a native huntsman in the environs of Chantaboun. The place was very difficult of access, so that the news of the discovery spread slowly. Rangoon being still at that time the nearest market to Siam for the sale of precious stones, the Burmans were the first to know of the existence of the new mine by the stones which were offered for sale at Rangoon. Some went there, and the large sums which they brought on their return from the sale of their produce brought about a movement of very active emigration for the same destination during the years 1878 and 1879. The new-comers discovered several mines as rich as the first. But there, as at Bantaphan, fevers made such sad ravages in the ranks of the workers, that in 1880 the number of arrivals decreased in considerable proportions; and at the present time the population of these mines, which once reached the figure of 10,000, consists of a few Pegu Toung-Thons, who can ward off better than other races the ills resulting from the terrible climate of the country. Rubies, onyx, and jades are also found in considerable quantities in the province of Chantaboun, but their quality leaves much to be desired. Battambang is as rich in precious stones as Chantaboun, and it is stated that recently diamonds have been found near the frontier of Cambodia; but the mines of this province are almost abandoned because of the insalubrity of the climate, and the want of protection for foreign workers.